

Appl. No.: 10/530,271
Amtd. Dated June 13, 2008
Reply to Office Action of June 11, 2007

REMARKS

A. Introduction

Claims 1-4 were pending and under consideration in the application.

In the Office Action of November 21, 2007, claims 1 and 2 were rejected as anticipated and claims 3 and 4 were rejected as obvious, as explained below.

In response and without conceding to the merits of the rejection, the claims 1-4 have been amended to more clearly recite an aspect of the present general inventive concept. Claims 5-13 are new. No new matter is presented.

B. Rejection under 35 USC §102(e)

Claims 1 and 2 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,771,533 to Witcraft et al. (hereinafter "Witcraft"). Reconsideration and withdrawal of the rejection are requested.

With respect to independent claim 1, on pages 2 and 3 of the Office Action, the Examiner alleges that Witcraft discloses all of the limitations of the invention as recited in independent claim 1. In particular, the Examiner alleges that:

Figure 8 of Witcraft discloses...a magnetic storage device of complementary type for storing storage data contrary to each other in a first ferromagnetic tunnel junction element 804 and a second ferromagnetic tunnel junction element 810 (col. 5, lines 52-54 and col. 12, lines 20-22), respectively, in which said magnetic storage device using said ferromagnetic tunnel junction elements is characterized in that: said first ferromagnetic tunnel junction element and said second ferromagnetic tunnel junction element are formed adjacently on a semiconductor substrate; a first writing lines are wound around said first ferromagnetic tunnel junction element like a coil and second writing lines are wound around said second ferromagnetic tunnel junction element like a coil; wherein a winding direction of said first writing lines and a winding direction of said second writing lines are reversed with respect to each other.

The Examiner further alleges the following:

Note that the "winding direction" is relative to the starting/ending point of the winding process. It is essentially a product-by-process limitation that does not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966. If a coil has two sides (side A and side B), the coil wound in a clockwise direction from side A to side B would have the same structure as if [they] were wound in a counter-clockwise direction from side B to side A. Therefore, both the first and second wiring coils can be considered to have either winding direction.

See the Office Action, page 3. However, it is respectfully submitted that Witcraft does not disclose or fairly suggest all of the elements of the Applicants' invention as presently recited in independent claim 1.

Witcraft describes a memory configuration (800) having first, second, and third row lines (610, 612, and 614) that run in exactly the same direction. See Witcraft, Fig. 8. Witcraft does not describe lines that run in different directions or lines that are wound reversed with respect to each other. Accordingly, Witcraft does not disclose or fairly suggest, among other things, "said first writing lines and said second writing lines are wound reversed with respect to each other" as recited in independent claim 1. The Examiner points out on that "the claim does not require that the lines run in different directions, or that they are reversed with respect to each other." See page 5. However, claim 1 recites precisely that. Notably, the structurally different orientation of the lines yields a device with dramatically increased performance. For instance, reversed writing lines result in magnetic forces that do not interfere with each other, which allows storage data to be written precisely and with improved reliability. See the Specification, page 8.

Accordingly, because Witcraft does not disclose or fairly suggest all of the elements set forth in independent claim 1, independent claim 1 is patentably distinguishable over Witcraft, and withdrawal of this rejection and allowance of this claim are respectfully solicited. Likewise, claims 3-4, which depend from independent claim 1, and thus include all of the limitations of independent claim 1, are also patentable over Witcraft. In addition, at least claim 2 is patentable over Witcraft for its own limitations, as well as for depending from independent claim 1.

Regarding claim 2, on page 3 of the Office Action, the Examiner alleges that Witcraft discloses all of the limitations of the invention as recited in claim 2. In particular, the Examiner exclusively relies on figure 8 of Witcraft to allege that:

Witcraft discloses...the first and second writing lines are connected at end points.

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

However, claim 2 does not merely recite “first and second writing lines...connected at end points,” as alleged by the Examiner. Rather, claim 2 recites “a start-end portion of said second writing lines...connected to a terminal-end portion of said first writing lines to be a sequence of writing lines.” The Examiner appears to acknowledge that Witcraft is deficient in this regard, but attempts to remedy this deficiency by alleging the following:

Whether or not those endpoints are start-ends or terminal-ends is merely a product-by-process limitation that does not structurally distinguish the claimed invention over the prior art. The patentability of a product does not depend on its method of production. If the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966.

See the Office Action, page 3. As pointed out above, Witcraft describes a memory configuration (800) having first, second, and third row lines (610, 612, and 614) that run in exactly the same direction. See Witcraft, Fig. 8. The first, second, and third row lines (610, 612, and 614) of Witcraft figure 8, as relied on by the Examiner, are not connected “with a start-end portion of said second writing lines...connected to a terminal-end portion of said first writing lines to be a sequence of writing lines to be a sequence of writing lines,” as recited in claim 2. Accordingly, Witcraft does not disclose or fairly suggest all of the elements set forth in claim 2.

In order for a document to anticipate a claim, the document must teach every element of the claim. MPEP 2131 states:

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as contained in the...claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). “The elements must be arranged as required by the claim...” *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Further, this structurally different sequence of writing lines yields a device with dramatically increased versatility. For instance, connecting start-end portions of writing lines to terminal-end portions of writing lines reduces an occupying area of the writing lines so that miniaturization of the device can be achieved. See the Specification, page 8.

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

In the event that the Office Action is relying on the theory of inherency in any manner, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art" (emphasis added). See MPEP §2112. The mere fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. See MPEP §2112.

Accordingly, because Witcraft does not disclose or fairly suggest all of the elements set forth in claim 2, claim 2 is patentably distinguishable over Witcraft, and withdrawal of this rejection and allowance of this claim are respectfully solicited. Claim 2 is also allowable based on its dependency from independent claim 1, which is allowable for the reasons provided above.

In addition to the foregoing, applicants reserve the right to remove Witcraft as a reference by proving an invention date earlier than the earliest effective filing date of Witcraft.

C. Rejection under 35 USC §103

Claims 3 and 4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Witcraft in view of U.S. Patent No. 5,732,016 to Chen et al. (hereinafter "Chen").

With respect to claims 3 and 4, on page 4 of the Office Action, the Examiner alleges that:

Witcraft discloses the first and second writing lines have upper and lower writing lines extending in a direction substantially perpendicular to a magnetized direction of said fixed magnetized layers, at positions above and below said first and second junction elements.

While the Examiner then admits that Witcraft does not disclose first and second writing lines [that] have parallel wiring portions which extend in a direction substantially parallel to a magnetized direction of fixed magnetization layers at positions immediately below said first tunnel junction element and said second tunnel junction element, the Examiner then states that:

Figures 8-11 of Chen disclose a magnetoresistive device with coil-shaped writing lines 80/86/87 surrounding a magnetoresistive element 84, wherein the writing lines have parallel wiring portions which extend in a direction substantially parallel to a magnetization direction of fixed magnetization layer at positions immediately below the element.

See the Office Action, page 4. The Examiner then concludes that "it would have been

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

obvious...to modify the invention of Witcraft by using the wiring structure of Chen for the purpose of selecting a wiring method that can be more easily fabricated." See the Office Action, page 4.

However, the Applicant respectfully submits that neither Witcraft nor Chen, either individually or combined, disclose the Applicant's invention as presently recited in claims 3 or 4.

Witcraft describes a memory configuration (800) having first, second, and third row lines (610, 612, and 614) that run from one side of elements (802, 806, or 808, figure 8) to another side in a direction that is neither parallel or perpendicular to the elements (802, 806, or 808) without changing directions, which is not the same as "extending in a direction parallel to a magnetization direction of fixed magnetization layers at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 3 or "extending in a direction perpendicular to a magnetization direction of said fixed magnetization layers...[and] parallel wiring portions extending in a direction parallel to a magnetized direction...at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 4.

Furthermore, Chen describes a device having lines (80 and 87) that also run from one side of an element (84, figures 8-11) to another side in a direction that is neither parallel or perpendicular to the element (84) without changing directions, which is not the same as "extending in a direction parallel to a magnetization direction of fixed magnetization layers at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 3 or "extending in a direction perpendicular to a magnetization direction of said fixed magnetization layers...[and] parallel wiring portions extending in a direction parallel to a magnetized direction...at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 4.

It is clear that the limitations of claims 3 and 4 not present in Witcraft are also not taught or suggested by Chen. The Examiner relies on Chen only to assert that it teaches "magnetoresistive device with coil-shaped writing lines 80/86/87 surrounding a magnetoresistive element 84, wherein the writing lines have parallel wiring portions which extend in a direction substantially parallel to a magnetization direction of fixed magnetization layer at positions

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

immediately below the element." See the Office Action, page 4. However, since Chen also does not teach or suggest the features which are lacking in Witcraft, including, "extending in a direction parallel to a magnetization direction of fixed magnetization layers at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 3 or "extending in a direction perpendicular to a magnetization direction of said fixed magnetization layers...[and] parallel wiring portions extending in a direction parallel to a magnetized direction...at positions immediately above or immediately below said first ferromagnetic tunnel junction element" as recited in claim 4, these claims are allowable over Witcraft and Chen, separately or in combination.

Therefore, neither Witcraft nor Chen, either individually or combined, teach or suggest all of the limitations recited in claims 3 and 4, and Applicants respectfully submit that the Examiner has not met the burden of establishing a prima facie case of obviousness as set forth in MPEP § 2142, portions of which are cited as follows:

"The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness....
...To establish a prima facie case of obviousness, three basic criteria must be met.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Further, even if Chen did disclose wiring portions oriented as disclosed in claims 3 and 4, one of ordinary skill in the art would not have been motivated to combine Chen with Witcraft since there would be no need to "select[] a wiring method that can be more easily fabricated," as alleged by the Examiner. See the Office Action, page 4. Notably, the "wiring method" as recited in claims 3 and 4 requires additional shaping of the material as well as additional material. Clearly, the Examiner's hypothesis for combining Witcraft and Chen is fatally flawed. At best, the Examiner seems to be arguing for impermissible hindsight.

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). (Emphasis added).

Still further, a brief comparison of the Witcraft (610, 612, and 614) with the Chen lines (80 and 87) reveals that the two references are quite different, as pointed out above. As such, there is no reasonable expectation of success in combining Witcraft and Chen. As such, the combination of Witcraft and Chen is improper. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (References are not properly combinable or modifiable if their intended function is destroyed).

Accordingly, because the references do not teach or suggest all of the limitations recited in independent claims 3 and 4, the references relied upon are not combinable without destroying the intended purpose of the references, and there is no motivation to combine the references relied upon to result in the Applicants' general inventive concept as claimed, the rejection of claims 3 and 4 under 35 U.S.C. §103(a) in view of Witcraft and Chen is improper, and withdrawal of this rejection and allowance of these claims are earnestly solicited.

In addition to the foregoing, Applicants reserve the right to remove Witcraft as a reference by proving an invention date earlier than the earliest effective filing date of Witcraft.

Appl. No.: 10/530,271
Amdt. Dated June 13, 2008
Reply to Office Action of June 11, 2007

D. New Claims

New claims 5-13 have been added. Support for the new claims can be found in the specification and drawings, for example, in Figs. 2-5 and corresponding portions of the Specification, e.g., page 8. New claims 5-13 recite features, which are not disclosed, taught, or suggested in the prior art of record.

Accordingly, it is respectfully submitted that new claims 5-13 do not present new matter and are allowable over the prior art of record, and allowance of these claims is earnestly solicited.

E. Conclusion

It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited.

If any further fees are required in connection with the filing of this amendment, please charge the same to our Deposit Account No. 19-3140.

Respectfully submitted,
SONNENSCHEIN NATH & ROSENTHAL LLP

By /Adam C. Rehm/
Adam C. Rehm, Reg. No. 54,797
P.O. Box 061080
Wacker Drive Station, Sears Tower
Chicago, IL 60606-1080
816-460-2542 (telephone)
816-531-7545 (facsimile)

ATTORNEYS FOR APPLICANT